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Ms. Donna Wieting, Chief,
Marine Mammal Conservation Section,
Office of Protected Resources,
National Marine Fisheries Service,
1315 East-West Highway,
Silver Spring, MD 20910-3226
Fax: 301-713-0376

May 30, 2001

Dear Ms. Wieting,

Re: comments on U.S. Navy application for LOA re LFAS

I wish to submit the following comments regarding the application by the U.S. Navy for a Letter of Authorization (LOA) for the take of marine mammals by harassment incidental to operation of SURTASS Low Frequency Active Sonar (LFAS). I oppose issuance of the LOA.

1. The Precautionary principle should be followed. In the NMFS discussion of the proposed rules (Federal Register March 19 2001) it is apparent that your agency believes little to no lethal harm will come to cetaceans, sea turtles, sharks or even schooling fish from LFAS deployment, and that you approve of the view held by some scientists that a received level (RL) of sound pulses at 180dB re 1 microPa (rms) is non-harmful. As I read your comments, the NMFS also believes that an RL of greater than 180dB re 1 microPa (rms) can injure or kill. It is the view of many knowledgeable scientists that RLs lower than 180dB re 1 microPa (rms) can be extremely harmful, even lethal. I am sure you are aware of this contrary view and the grounds upon which it is held. Given these circumstances (unresolved debate over RL harm thresholds) surely the appropriate cautionary response would be to deny the LOA until such time as this fundamental issue has been resolved.

2. Insufficient scientific testing. The U.S. Navy makes much of the results of the tests of LFAS exposure conducted by the group of scientists contracted to conduct this work. The NMFS appears to agree with the Navy's conclusion that these tests were sufficient to demonstrate that impacts of LFAS exposure are acceptable, and that the risks of LFAS deployment are therefore acceptable. I strongly disagree with this conclusion. In my view, the tests were completely inadequate because they were conducted on only four species of cetaceans, all baleen whales, and because they were conducted at RL levels far below those that will be used by the Navy under the LOA. The tests did not even consider the impacts of exposure to an RL of 180dB re 1 microPa (rms), which the U.S. Navy & the NMFS consider safe. Given these facts, it seems to me essential that the NMFS direct the Navy to conduct further scientific testing on a broader range of species and at higher RLs before an LOA is issued.

3. Inadequate evaluation of scientific data. So far as I am aware, the results of the scientific studies commissioned by the Navy have not been formally published and subject to peer review. If this is so, I wonder whether the failure to publish is an indication of fundamental inadequacies in the science that was undertaken? One immediately obvious problem with the Phase I tests was that the sample size was too small for statistical evaluation of an apparent drop in vocalization rates by fin and blue whales during LFAS exposure. The conclusion of the scientists who conducted this work was that there were no impacts. However, the absence of statistical proof may well have been an artefact of small sample size. I suspect that peer review of the work would have pointed out this deficiency. Again, my conclusion is that the NMFS should delay issuing the requested LOA until additional scientific studies are undertaken, or at least until the results & conclusions of the existing studies have received satisfactory evaluation by the larger scientific community.

4. Failure to consider relevant evidence. Neither the U.S. Navy or the NMFS lend any weight to clear evidence of adverse impacts that low and mid frequency military sonar can have on cetaceans. The failure to consider the Bahamas strandings and deaths in 2000 can perhaps be understood, as the sonar frequencies implicated were lower than those of the LFAS systems to be deployed by the U.S. Navy. However, I do not understand the failure to consider the strandings and deaths that followed NATO use of low frequency sonar in the Mediterranean in 1996. Given that there are now good grounds for believing that the injuries and deaths in both instances resulted from intra cranial resonance stresses caused by sonar pulses, surely it is now incumbent on the Navy to reassess these events, and for the NMFS to delay issuing the requested LOA until the Navy has done so.

5. International issues. The U.S. Navy makes much of the lengths to which it plans to go in mitigation of LFAS impacts, and the NMFS concurs that they are sufficient. One measure stated is geographic deployment of LFAS vessels in a manner that ensures RLs do not exceed 180dB re 1 microPa (rms) within 12 miles of coastlines. Obviously, this means that higher than 180dB re 1 microPa (rms) LFAS levels will occur, perhaps commonly, within the 200 mile EEZs of numerous foreign nations. I'm uncertain as to how the Law of the Sea deals with such an incursion, if at all, but it does seem to me that many nations may well be offended by the failure of the U.S. to seek their approval before deployment of LFAS vessels or propagation of LFAS pings within ocean space over which they have jurisdiction. I understand that the NMFS may well consider this issue outside their competence or mandate, but nevertheless by issuing the requested LOA the agency will be making a statement (& taking an action) that has clear international ramifications. In view of this, the NMFS might well consider it prudent to defer its decision on the requested LOA until such time as the U.S. government has set in place appropriate international agreements and approvals that govern its use of LFAS.

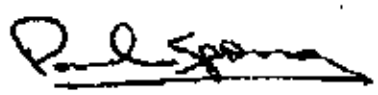
6. Limitations of mitigation. The NMFS regards as unproven the technology the U.S. Navy proposes to use to ensure a high level of detection of marine mammals within 1km of the LFAS vessel, and intends to request of the Navy that the technology be proven in the 1st year authorized by the LOA. It is therefore very clear that the mitigation proposals of the Navy are deficient. Given this, the appropriate response of the NMFS should be to insist that the Navy prove its proposed mitigation technology prior to issuance of the LOA.

7. Alternate solutions. Again, the NMFS may well consider this point outside its mandate or competence, but I must point out that clear non-harmful alternatives to LFAS exist that are or can be just as effective in solving the problem addressed by LFAS. Indeed, the U.S. Navy is already developing such alternate systems, and as signal detection technology improves, there is no question they will get better. From a strategic point of view, a passive detection system is vastly superior to an active system because it operates without the risk of detection that makes LFAS vessels obvious and easy targets.

My conclusion, which is shared widely by scientists and the public around the world, is that the risks posed by LFAS deployment are real and unacceptable. Where there are gaps in knowledge, caution dictates that time and effort be put into resolving the issues. What possible harm to U.S. interests can occur from delaying a decision to issue the requested LOA? I urge your agreement with this perspective. The NMFS must deny the US Navy's application for an LOA.

I request that my comments become part of the public record regarding this matter, and thank you for your consideration of my views.

Sincerely yours,



Paul Spong, Ph.D.

Jerry Rothstein From Jerry Rothstein

From: Larry Morningstar <mana7@aloha net>
To: <undisclosed-recipients >
Sent: Tuesday, May 29, 2001 4 34 PM
Attach: Unknown txt
Subject: Ocean Sanctity Specific references about LFAS and how it is scientifically flawed

----- Begin Forwarded Message -----
Date: 3/31/01
From: Joyce O'Neal/OMI

We have compiled a very specific listing of facts disputing the Navy's claim
that LFAS is safe.

I am attaching the 5 page document as a file

Please make widest distribution on this document and feel free to use any or
all of the information as you ask your supporters and friends to write to NMFS by the May 31deadline concerning the Navy's request to use this dangerous technology.

Sincerely,
Joyce O'Neal
Chief Operations Manager
Ocean Mammal Institute

----- End Forwarded Message -----

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A copy of the document from OMI follows

Why the Navy's Conclusions about the Safety of LFAS are Scientifically Flawed

The scientific reasoning behind the Navy's conclusions in their Environmental Impact Statement (EIS) that Low Frequency Active Sonar (LFAS) is safe are scientifically flawed for several reasons:

* The Navy's Scientific Research program never tested the full source level of LFAS on marine mammals. In the Hawaii Quicklook, written by the marine mammal scientists who conducted the testing, they say on page 5, "This research did not use the full source level of LFA On page 6

they say, "The playback protocol used in this Phase III research was specifically designed to expose animals to LFA sounds at levels that are not harmful." In the Executive Summary on page vi they say, "Sit will be difficult to extrapolate from these results to predict responses at higher exposure levels."

The Navy has not followed the advice of their own hired scientists and has inappropriately extrapolated to conclude that LFAS is safe to deploy at levels of at least 5,000 times more acoustic intensity and 70 times more pressure than test levels

* Even at the lower LFAS test levels a number of negative effects were documented including inshore gray whales changing their migration route, blue and fin whales decreasing their vocalization by 50 and 30% respectively, humpback whales leaving the test area, humpback whales changing the length of their song and three abandoned cetacean calves appearing in the test area in Hawaii during and right after testing. According to the precautionary principle, these observations should have been heeded as warning signs Instead they were ignored or dismissed as biologically insignificant.

* Published accounts of whale strandings correlated with Naval maneuvers (Nature 1991 and 1998) suggest that beaked whales are especially vulnerable to high intensity sonar. However, beaked whales were not included in LFAS testing. In fact every recorded multi species stranding involving beaked whales has been correlated with Naval maneuvers nearby

* LFAS was tested at low levels on only four species of whales for about one month each. Consequently, we know virtually nothing about what impact the higher, deployment level sonar will have on marine life and humans over the long term.

* The Navy's research has focused on LFAS damaging hearing in cetaceans. However, evidence now indicates that the damage from high intensity sonar is due mainly to resonance phenomena in the whales' cranial air spaces that tear apart delicate tissues around their brains and ears. Necropsies show that this is what caused the death of the whales in the Bahamas stranding in March 2000. The Navy has known the resonance frequency of airspaces in Cuvier's beaked whales since 1998

* The Navy ignores widely accepted research showing that whales change their behavior and show avoidance at about 115-120 dB. (Marine Mammals and Noise, 1995) In fact, they have consistently attempted to increase the scientifically accepted level at which whales change their behavior in response to noise without research to substantiate the increase

Alternative Technology

According to the Navy, LFAS will be used to detect enemy submarines. We now know that the Navy has developed passive sonar systems that can detect silent submarines and not harm marine life.

This was noted in a statement of RADM Malcolm I Fages, U S. Navy Director, Submarine Warfare Division Office of the Chief Of Naval Operations (N87) and RADM J. P. Davis, U.S. Navy Program Executive Office for Submarines before the House Armed Services Committee Military Procurement Subcommittee on Submarine Force Structure and Modernization 27 June 2000:

Admiral Fages said in direct testimony that the Navy now has the ability to detect quiet submarines in littoral waters using passive listening systems, at considerable distances.

"Surveillance Towed Array Sensor System (SURTASS) [illegible] operations in 1998 and 1999 demonstrated the ability to detect advanced diesel submarines at substantial ranges in the littoral environment where contact was previously thought to be "unobtainable" by the operational commanderS This use of COTS equipment has also resulted in substantially reduced costs with no reduction in fielded capability Development of the new Advanced Deployable System (ADS) will provide a rapidly deployable acoustic array installed on the ocean floor that provides littoral undersea wide-area surveillance and real time cueing. ADS development is moving along smoothly with potential for accelerated capability development."

>From an environmental standpoint, there is no conflict by employing the safe, passive detection systems, and shutting down the acoustically hazardous LFAS system, the Navy can fulfill its missions for national security and be stewards of the seas

While stopping the deployment of LFAS will protect marine life, it will not address harmful impacts from conventional Navy operations evidenced in the whale stranding and deaths in the Bahamas in March, 2000. However it would be environmentally and fiscally sound to halt production of acoustically hazardous and tactically questionable LFAS.

Specific References

1. The scientific literature consistently states that whales move away from sounds at 115-120 dB
* Richardson, W.J., Greene, C.R., Malme, C.I. and Thomson, D.H. (1995) Marine Mammals and Noise. Academic Press.

2. Sperm whales stopped vocalizing in response to [illegible]

hundreds of kilometers away
* Bowles, A.E., Smultea, M.,Wursig, B., DeMaster, P. and Plaka, D. (1994) Abundance of marine mammals exposed to transmissions from Heard Island Feasibility Test. Journal of the Acoustical Society of America 96; 2469-2484.

3. Studied reactions of humpback whales in response to explosions and drilling off Newfoundland. Their data revealed only small changes in residency, movements and general behavior. However, two humpback whales trapped in fishing gear after the explosions were found to have severely damaged ear structures similar to blast injury in humans. They noted that the whales showed no dramatic behavioral reaction to these harmful sounds and cautioned that whales' visible short-term reactions to loud sounds may not be a valid measure of the degree of impact of the sound on them:
* Lien, J., Todd S., Stevick, P., Marques, F. and Ketten, D. (1993) The reaction of humpback whales to explosives; Orientation, movements and behavior. 126th Meeting of the Acoustical Society of America. Journal of the Acoustical Society of America 94: 1849

4. Bowhead whales react to a received level of 115 dB. Noted behavioral changes in bowhead whales more than 8 km from seismic vessels with received noise levels of 142-156 dB:
* Ljungblad, D.K., Wursig, B., Swartz, S.L. and Keene, J.M. (1988) Observations on the behavioral responses of bowhead whales (Balacena mysticetus) to active geophysical vessels in the Alaskan Beaufort Sea. Artic 41: 183-194.

5. Several studies show that grey whales begin to avoid sounds at exposure levels of 110 dB and more than 80% of the whales showed avoidance to sounds at 130 dB. Ninety percent of the whales avoided airgun pulses at 180 dB. Typically whales slowed down and moved around the sound source. At times they moved into the shallow surf zone to avoid the noise, respiration rates increased and there were indications that mother-calf pairs were more sensitive to the noise than other whales:
* Malme, C.I., Miles, P.R., Clark, C.W., Tyak, P. and Bird, J.E. (1983) Investigations of the potential effects of underwater noise from petroleum industry activities on migrating gray whale behavior. BBN Report 5366, Report from Bolt Beranek & Newman Inc., Cambridge, MA for US Minerals Management Service, Anchorage, AK, NTIS PB85-174754

* Malme, C.I., Miles, P.R., Clark, C.W., Tyak, P. and Bird, J.E. (1984) Investigations of the potential effects of underwater noise from petroleum industry activities on migrating gray whale behavior. Phase II: January 1984 migration. BBN Report 5851, Report from BBN Laboratories Inc., Cambridge, MA for US Minerals Management Service, Anchorage, AK, NTIS PB86-218385.

* Malme, C.I., Miles, Wursig, B., Bird, J.E. and Tyack, P. (1986) Behavioral responses of gray whales to industrial noise: Feeding,

observations and predictive modeling. BBN Report 6265, Report from BBN Laboratories Inc., Cambridge, MA for US National Oceanic and Atmospheric Administration and US Minerals Management Service, Anchorage, AK.

* Malme, C.I., Miles, Wursig, B., Bird, J.E. and Tyack, P. (1988) Observations of feeding gray whale responses to controlled industrial noise exposure. In: Sackinger, W.M. et al. (Eds) Port and Ocean Engineering Under Arctic Conditions. Volumn II. University of Alaska. Fairbanks, AK, Geophys. Inst.

* Malme, C.I. Miles, P.R., Miller, G.W., Richardson, W.J., Rosenbaum, D.C., Thomson, K.H., and Green, C.R., (1989) Analysis and ranking of acoustic disturbance potential of petroleum industry activities and other sources of noise in the environment of marine mammals in Alaska. BBN Report 6945, OCS Study MMS 98-0006, Report from BBN Systems & Technological Corporation, Cambridge, MA, for US Minerals Management Service, Anchorage, AK, NTIS PB90-188673.

6. Humpback whales showed avoidance when sonar was played back to them:
* Maybaum, H.L., (1989) Effects of 3.3 kHz sonar system on humpback whales, Megaptera novaeangliae, in Hawaiian waters. Tos 71-85

7. After WWII the Norwegians used sonar to hunt whales because they found the sonar frightened especially baleen whales and caused a predictable flight response making them easier to catch:
* Mitchell, E. Blaylock, G. and Kozicki, V.M., (1981) Modifiers of effort in whaling operations with a survey of anecdotal sources on searching tactics and the use of asdic in the chase. Center for Environmental Education Monograph Series, Center for Environmental Education Inc., 1925 K Street NW, Washington, DC

8. Loud underwater sounds also, of course, affect fish and other marine life. Studies show harmful effects of even moderate noise on hearing in fish and the viability of fish eggs exposed to noisy environments was significantly reduced:
* Myrberg, A.A. (1990) The effects of Man-Made Noise on the Behavior of Marine Animals. Environment International 16 575-586

9. While cetaceans show avoidance behavior to sounds starting around 115 dB, more intense sounds can cause physiological damage. Noise can mask biologically important signals. This article suggests that baleen whales show low auditory thresholds for low frequency sounds and that sound levels of 195-210 dB might result in immediate damage to their auditory organs:
* Richardson, W.J., Green, C.R., Malme, C.I., Thompson, D.H., Moore, S.E. and Wursig, B. (1991) Effects of noise on marine mammals. Report prepared by LGL Ecological Research Associates Inc. for Minerals Management Service, Atlantic OCS Region, Herndon, VA. MMS 90-0093, NTIS PB 91-168914, 462 pp

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10. In their chapter "Underwater Noise Pollution and its Significance for Whales and Dolphins", Jonathan Gordon and Anna Moscrop state that shock waves caused by intense underwater sound sources can cause direct tissue damage. Animals with air filled lungs and swim bladders are especially vulnerable because of the large difference in impedance between air in the lungs and their body tissues or sea water. Submerged animals exposed to explosions at short range showed hemorrhage in the lungs and ulceration of the gastro-intestinal tract.
* Simmonds, M.P. and Hutchinson, J.D. (1996) The Conservation of Whales and Dolphins. John Wiley & Sons.

11. Sperm whales became silent, stopped their activities and scattered in response to military sonar signals:
* Watkins, W.A., Moore, K.E., and Tyack, P. (1985) Sperm whale acoustic behaviors in the Southeast Caribbean. Cetology 19:1-15

12. From Sounding the Depths by Michael Jasney, page 38: "The National Environmental Policy Act demands that the Navy 'rigorously explore and objectively evaluate all reasonable alternatives'--a duty that [illegible] the words of the regulators, at 'the heart' of the entire assessment process. In this light, mere proclamations of national security do not suffice. It is necessary to establish that LFA, which was initially designed to face the deep-sea Soviet threat, actually meets the needs of the post-Cold War world. Doubts persist over the proposed mitigation, and not merely among conservationists, but in such neutral quarters as the General Accounting Office and Jane's Defense Weekly. At least one military contractor has recommended that the Navy stick to passive sonar even in combat, since active sonar could serve as a beacon, attracting enemy fire. And indeed a less intrusive, passive sonar program that would deal expressly with the coastal threat - Advanced Deployable Systems - is ready for testing. Even as the Navy pushes forward on LFA, with NATO at its heels, the potential of this program for [illegible] serve as the more 'reasonable alternative' contemplated by [illegible] has not, to our knowledge, been addressed. Under the circumstances, NRDC has opposed, and continues to oppose, the deployment [illegible]
. Jasney, M. (1999) Sounding the Depths: Supertankers, Sonar, and the Rise of Undersea Noise. Natural Resources Defense Council, Los Angeles, CA.

13. Alexandros Frantzis linked a stranding of Cuvier's beaked whales in the Mediterranean to military low frequency active [illegible] the day before. Cuvier's beaked whales rarely strand. A Bahamas Panel investigated this stranding and it is clear that the [illegible] transmitting the LFA sonar came within 10 km of the [illegible] the whales stranded. The panel concluded these whales [illegible] LFA sonar at 150 (+/-) dB.
* Frantzis, A. (1998) Does acoustic testing strand [illegible] 29.

14. Noted the association between three other strandings [illegible] (including two pygmy sperm whales, a bottle-nosed [illegible] beaked whales in the Canary Islands in 1985, 1988 [illegible] times

at which naval fleets had been visibly operating in the area close to stranding sites:
* Simmonds, M.P. and Lopez-Jurado, L.F. (1991) Whales and the Military. Nature 351:448.

15. In their annual report to Congress (Jan.31, 1998) the Marine Mammal Commission stated, "If the LFA system were made available for worldwide use as proposed, all species and populations of marine mammals including those listed as endangered and threatened under the Endangered Species Act possibly could be affected."
This report continues to explain that the possible effects on marine mammals could include:
* death from trauma
* hearing loss
* disruption of feeding, nursing, sensing and communication
* abandonment of traditional feeding and breeding habitats
* stress (making animals more vulnerable to disease ...)
* changes in distribution and abundance of important ... prey species
* subsequent decreases in marine mammal survival and productivity

16. The Navy has funded much of the research done ... in the U.S. on the effects of sound on marine mammals. ... Marine Mammal Science (published by the Society for Marine Mammalogy) published scientific correspondence entitled, "Marine Mammal Science, the US Navy and Academic Freedom." This correspondence discusses the reluctance of US marine mammal scientists to criticize two previous ... projects, Shipshock and ATOC. The authors state ... prominent US marine mammal scientists with expertise ... were involved in ATOC." (ATOC was transmitted at about ... be transmitted at 235 dB). The authors go on to say, "... of marine mammal science in the US where Navy and ... related agencies fund a large proportion of medium-large ... those involving underwater acoustics) effectively ... freedom.S ... it is disturbing when any agency with a ... unrelated to science funds a large proportion of the ... field."
* Whitehead ... and Weilgart, L. (1995) Marine mammal ... Navy and academic freedom. Marine Mammal Science ...

17. In a report submitted to National Marine Fisheries ... 1998 on the impact of engine noise on the Hawaiian ... researchers at the Ocean Mammal Institute found ... to 3 times faster away from engines of 120 dB than ... engines. Research by the Ocean Mammal Institute ... presence of a boat up to _ mile away significantly ... of humpback whales.

18. Ken Balcomb, a marine mammal scientist ... Bahamas, sent a letter to the LFAS Program Manager ...

stating that in the year following the Bahamas stranding, March 2001, he has not seen any of the photo-identified beaked whales he normally saw in the area. In fact, he has seen only two beaked whales since March and they were individuals he had never seen before. He believes they were new to the area. He concludes, "it is probable that all Cuvier's beaked whales in the region when the naval exercise commenced were killed by the sonar."
* Letter dated February 23, 2001 to Mr. J.S. Johnson

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Larry Morningstar
Ocean Sanctity

5/30/01